

## **IN THE CLAIMS:**

The following listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Previously presented): A memory medium comprising program instructions for creating a measurement run-time, wherein the program instructions are executable by a processor to implement:

- a measurement task specifier, operable to generate a measurement task specification for a measurement task in response to user input;

- an expert system, operable to analyze the generated measurement task specification and generate a run-time specification for the measurement task;

- wherein the run-time specification is useable to:

- configure one or more measurement devices according to the run-time specification; and

- generate a run-time, wherein said run-time is executable to perform the measurement task.

2. (Previously presented): The memory medium of claim 1, wherein the program instructions are further executable to implement:

- a run-time builder, operable to:

- analyze the run-time specification;

- configure the one or more measurement devices according to the run-time specification; and

- generate a said run-time, wherein said run-time is executable to perform the measurement task.

3. (Previously presented): The memory medium of claim 2, wherein said run-time builder is further operable to:

- reserve one or more resources according to the run-time specification in response to said analyzing the run-time specification.

4. (Previously presented): The memory medium of claim 2, wherein said run-time builder is further operable to:

analyze changes made to the run-time specification; and  
change configuration of said one or more measurement devices in response to said analyzing changes, wherein the configuration changes correspond to said changes made to the run-time specification.

5. (Original): The memory medium of claim 2, wherein the expert system is further operable to:

analyze incremental changes made to the measurement task specification; and  
populate one or more run-time specification change lists with measurement primitive settings;

wherein the run-time builder is further operable to:  
modify the run-time based on said one or more run-time specification change lists.

6. (Original): The memory medium of claim 1, wherein the memory medium stores one or more of:

the generated measurement task specification;  
the generated run-time specification; and  
configuration information for the one or more measurement devices.

7. (Original): The memory medium of claim 1,  
wherein the memory medium further stores one or more measurement primitives;  
and

wherein said generated run-time specification comprises a specification of the parameters of one or more of the measurement primitives.

8. (Original): The memory medium of claim 7, wherein each measurement primitive comprises a software object and corresponding configuration settings, and

wherein each measurement primitive is operable to implement at least a portion of the measurement task.

9. (Original): The memory medium of claim 1, wherein the measurement task specifier comprises an Application Programming Interface (API).

10. (Original): The memory medium of claim 1, wherein the measurement task specifier is operable to be invoked from an application development environment.

11. (Original): The memory medium of claim 10, wherein the application development environment comprises one of a text-based or graphical programming-based application development environment.

12. (Original): The memory medium of claim 1, wherein the measurement task specifier is operable to be launched from one or more of: an application development environment toolbar or an application development environment menu.

13. (Original): The memory medium of claim 1, wherein the measurement task specifier is operable to be presented as a properties page of an Active X control.

14. (Original): The memory medium of claim 1, wherein the measurement task specifier is operable to be invoked by receiving user input to an icon.

15. (Original): The memory medium of claim 1, wherein the measurement task specifier is operable to be invoked by receiving user input to a node in a graphical program.

16. (Original): The memory medium of claim 1,  
wherein the memory medium is comprised in a computer-based measurement system; and

wherein the computer-based measurement system includes the one or more measurement devices, wherein the one or more measurement devices are operable to respectively perform portions of the measurement task.

17. (Previously Presented): The memory medium of claim 1,  
wherein the memory medium is comprised in a computer system that includes a display;

wherein the measurement task specifier is operable to present one or more panels on the display for receiving the user input.

18. (Previously Presented): The memory medium of claim 1,  
wherein the measurement task specification comprises a data structure comprising the user input received by the measurement task specifier or a measurement application programming interface (API).

19. (Original): The memory medium of claim 1,  
wherein the measurement task specifier comprises a measurement task configuration tool which is operable to generate measurement task code in response to said user input, wherein said measurement task code comprises one or more of a text-based program, a graphic-based program, and a prototype-based program.

20. (Original): The memory medium of claim 19, wherein said measurement task code comprises one or more of: C code; C++ code; Java; Visual Basic; and .NET code.

21. (Original): The memory medium of claim 19, wherein said measurement task code comprises a measurement task diagram.

22. (Original): The memory medium of claim 21, wherein said measurement task diagram comprises a graphical program.

23. (Previously Presented): The memory medium of claim 22, wherein said graphical program comprises a LabVIEW graphical program.

24. (Previously Presented): The memory medium of claim 1, wherein said expert system comprises a plurality of experts; wherein said expert system is further operable to:

- analyze the generated measurement task specification;
- select and invoke one or more of the plurality of experts to analyze the generated measurement task specification and populate one or more candidate run-time specifications;
- calculate one or more metrics for each of the populated candidate run-time specifications; and
- select one of the populated candidate run-time specifications based on the calculated one or more metrics;

wherein the selected populated candidate run-time specification comprises at least a portion of said generated run-time specification of the measurement task.

25. (Original): The memory medium of claim 1, further comprising:

- a device and resource configuration tool, wherein the device and resource configuration tool is operable to receive second user input, and to set system configuration parameters for the one or more measurement devices in response to said second user input.

26. (Original): The memory medium of claim 1, wherein the expert system is further operable to validate the measurement task specification.

27. (Original): The memory medium of claim 1, wherein the measurement task comprises a plurality of measurement sub-tasks.

28. (Original): The memory medium of claim 1, wherein the measurement task comprises a complex measurement operation using a plurality of measurement devices.

29. (Original): The memory medium of claim 1, wherein at least one of the one or more measurement devices comprises a hardware measurement device.

30. (Original): The memory medium of claim 1, wherein at least one of the one or more measurement devices comprises a virtual measurement device.

31. (Currently Amended): A memory medium comprising program instructions for creating a measurement run-time, ~~[[comprising:]]~~ wherein the program instructions are executable by a computer, wherein the program instructions implement:

- a measurement task specifier, operable to generate a measurement task specification for a measurement task in response to user input;

- an expert system, operable to:

- analyze the generated measurement task specification;

- validate the measurement task specification; and

- generate a run-time specification for the measurement task; and

- a run-time builder, operable to:

- analyze the run-time specification;

- reserve one or more resources according to the run-time specification after said analyzing the run-time specification;

- configure one or more measurement devices according to the run-time specification; and

- generate a run-time, wherein said run-time is executable to perform the measurement task.

32. (Previously Presented): A method for performing a measurement task, the method comprising:

- receiving user input specifying the measurement task;

- generating a measurement task specification in response to said user input;

- analyzing the measurement task specification, and generating one or more candidate run-time specifications for the measurement task in response to said analyzing;

calculating one or more metrics for each of the one or more candidate run-time specifications and selecting one of the one or more candidate run-time specifications based on the calculated one or more metrics;

analyzing the selected candidate run-time specification;

configuring one or more measurement devices according to the selected candidate run-time specification; and

generating a run-time based on the selected candidate run-time specification, wherein said run-time is executable to perform the measurement task.

33. (Previously Presented): The method of claim 32, further comprising:

reserving one or more resources according to the selected candidate run-time specification after said analyzing the selected candidate run-time specification.

34. (Original): The method of claim 32, further comprising:

validating the generated measurement task specification in response to said analyzing the measurement task specification.

35. (Previously Presented): The method of claim 32, further comprising:

storing one or more of the generated measurement task specification, the generated candidate run-time specification, and configuration information for the one or more measurement devices.

36. (Previously Presented): The method of claim 32, further comprising:

analyzing changes made to the one or more candidate run-time specification; and  
changing configuration of said one or more measurement devices in response to said analyzing changes, wherein the configuration changes correspond to said changes made to the one or more candidate run-time specification.

37. (Original): The method of claim 32, further comprising:

analyzing incremental changes made to the measurement task specification; and

populating one or more run-time specification change lists with measurement primitive settings; and

modifying the run-time based on said one or more run-time specification change lists.

38. (Original): The method of claim 32, further comprising:  
executing said run-time to perform the measurement task.

39. (Previously Presented): The method of claim 32,  
wherein said one or more candidate run-time specification comprises a specification of the parameters of one or more measurement primitives, wherein each measurement primitive comprises a software object and corresponding configuration settings, and wherein each measurement primitive is operable to implement at least a portion of the measurement task.

40. (Original): The method of claim 32, further comprising:  
generating measurement task code in response to said user input.

41. (Original): The method of claim 40,  
wherein said measurement task code comprises one or more of C code, C++ code, Java code, Visual Basic, and .NET code.

42. (Original): The method of claim 32, further comprising:  
generating a measurement task diagram in response to said user input.

43. (Original): The method of claim 42,  
wherein said measurement task diagram comprises a graphical program.

44. (Original): The method of claim 43,  
wherein said graphical program comprises a LabVIEW graphical program.



45. (Original): The method of claim 32, further comprising:  
receiving second user input; and  
setting system configuration parameters for the one or more measurement devices  
in response to said receiving second user input.

46. (Original): The method of claim 32, wherein the measurement task comprises  
a plurality of measurement sub-tasks.

47. (Original): The method of claim 32, wherein the measurement task comprises  
a complex measurement operation using a plurality of measurement devices.

48. (Original): The method of claim 32, wherein at least one of the one or more  
measurement devices comprises a measurement hardware device.

49. (Original): The method of claim 32, wherein at least one of the one or more  
measurement devices comprises a virtual measurement device.

50. (Previously Presented): A method for performing a measurement task, the  
method comprising:

receiving user input specifying the measurement task;  
generating a measurement task specification in response to said user input;  
analyzing the measurement task specification, and generating a run-time  
specification for the measurement task in response to said analyzing;  
analyzing the run-time specification;  
configuring one or more measurement devices according to the run-time  
specification; and  
generating a run-time based on the run-time specification, wherein said run-time  
is executable to perform the measurement task;  
receiving second user input; and  
setting system configuration parameters for the one or more measurement devices  
in response to said receiving second user input.

51. (Cancelled).

52. (Original): The method of claim 50, wherein the measurement task comprises a plurality of measurement sub-tasks.

53. (Original): The method of claim 50, wherein the measurement task comprises a complex measurement operation using a plurality of measurement devices.

54. (Original): The method of claim 50, wherein at least one of the one or more measurement devices comprises a measurement hardware device.

55. (Original): The method of claim 50, wherein at least one of the one or more measurement devices comprises a virtual measurement device.

56. (Previously presented): A system, comprising:  
a measurement task specifier, operable to generate a measurement task specification for a measurement task in response to user input;  
an expert system, operable to:  
    analyze the generated measurement task specification;  
    validate the generated measurement task specification; and  
    generate a run-time specification for the measurement task;  
a run-time builder, operable to:  
    analyze the run-time specification;  
    configure one or more measurement devices according to the run-time specification; and  
    generate a run-time, wherein said run-time is executable to perform the measurement task.

57. (Previously presented): The system of claim 56, wherein the run-time builder is further operable to:

reserve one or more resources according to the run-time specification in response to said analyzing the run-time specification.

58. (Previously presented): The system of claim 56, wherein said run-time builder is further operable to:

- analyze changes made to the run-time specification; and
- change configuration of the one or more measurement devices in response to said analyzing changes, wherein the configuration changes correspond to said changes made to the run-time specification.

59. (Previously presented): The system of claim 56, wherein the expert system is further operable to:

- analyze incremental changes made to the measurement task specification; and
- populate one or more run-time specification change lists with measurement primitive settings;

- wherein the run-time builder is further operable to:

- modify the run-time based on said one or more run-time specification change lists.

60. (Previously Presented): The system of claim 56, wherein the measurement task specifier comprises an Application Programming Interface (API).

61. (Previously Presented): The system of claim 56, further comprising:

a storage system which is operable to store one or more of:

- the generated measurement task specification;
- the generated run-time specification; and
- configuration information for the one or more measurement devices.

62. (Previously Presented): The system of claim 56, wherein said generated run-time specification comprises a specification of the parameters of one or more measurement primitives, wherein each measurement primitive comprises a software

object and corresponding configuration settings, and wherein each measurement primitive is operable to implement at least a portion of the measurement task.

63. (Previously Presented): The system of claim 56, wherein the measurement task specifier is operable to be invoked from a text-based application development environment.

64. (Previously Presented): The system of claim 56, wherein the measurement task specifier is operable to be launched from an application development environment toolbar.

65. (Previously Presented): The system of claim 56, wherein the measurement task specifier is operable to be invoked from an application development environment menu.

66. (Previously Presented): The system of claim 56, wherein the measurement task specifier is operable to be presented as a properties page of an Active X control.

67. (Previously Presented): The system of claim 56, wherein the measurement task specifier is operable to be invoked by receiving user input to an icon.

68. (Previously Presented): The system of claim 56, further comprising:  
the one or more measurement devices which are operable to respectively perform portions of the measurement task.

69. (Previously Presented): The system of claim 56, wherein said measurement task specifier is operable to generate measurement task code in response to said user input.

70. (Previously Presented): The system of claim 69, wherein said measurement task code comprises C code.

71. (Previously Presented): The system of claim 69, wherein said measurement task code comprises C++ code.

72. (Previously Presented): The system of claim 69, wherein said measurement task code comprises Visual Basic code.

73. (Previously Presented): The system of claim 69, wherein said measurement task code comprises Java code.

74. (Previously Presented): The system of claim 69, wherein said measurement task code comprises .NET code.

75. (Previously Presented): The system of claim 56, wherein said measurement task specifier is operable to generate a measurement task diagram in response to said user input.

76. (Previously Presented): The system of claim 75, wherein said measurement task diagram comprises a graphical program.

77. (Previously Presented): The system of claim 76, wherein said graphical program comprises a LabVIEW graphical program.

78. (Currently Amended): A [[processor executable]] computer-implemented method for creating a measurement run-time, comprising:

receiving user input specifying a measurement task;

generating a measurement task specification for the measurement task in response to the user input;

analyzing the generated measurement task specification, wherein the generated measurement task specification is analyzed by an expert system;

generating a run-time specification for the measurement task, wherein the expert system generates the run-time specification for the measurement task;

configuring one or more measurement devices according to the run-time specification; and

generating a run-time, wherein the run-time is executable to perform the measurement task, and wherein the run-time is generated using the run-time specification.

79. (Previously Presented): The method of claim 78, wherein a run-time builder is operable to analyze the run-time specification, configure the one or more measurement devices according to the run-time specification, and generate the run-time, wherein the run-time is executable to perform the measurement task.

80. (Previously Presented): The method of claim 79, further comprising:  
reserving one or more resources according to the run-time specification in response to said analyzing the run-time specification.

81. (Previously Presented): The method of claim 79, further comprising:  
analyzing changes made to the run-time specification; and  
changing configuration of said one or more measurement devices in response to said analyzing changes, wherein the configuration changes correspond to said changes made to the run-time specification.

82. (Previously Presented): The method of claim 79, further comprising:  
analyzing incremental changes made to the measurement task specification; and  
populating one or more run-time specification change lists with measurement primitive settings; and  
modifying the run-time based on said one or more run-time specification change lists.

83. (Previously Presented): The method of claim 78, further comprising storing one or more of:

- the generated measurement task specification;
- the generated run-time specification; and
- configuration information for the one or more measurement devices.

84. (Previously Presented): The method of claim 78, further comprising:  
storing one or more measurement primitives;  
wherein said generated run-time specification comprises a specification of the parameters of one or more of the measurement primitives.

85. (Previously Presented): The method of claim 84, wherein each measurement primitive comprises a software object and corresponding configuration settings, and wherein each measurement primitive is operable to implement at least a portion of the measurement task.

86. (Previously Presented): The method of claim 78, wherein a measurement task specifier generates the measurement task specification, and wherein the measurement task specifier comprises an Application Programming Interface (API).

87. (Previously Presented): The method of claim 78, wherein a measurement task specifier generates the measurement task specification, and wherein the measurement task specifier is operable to be invoked from an application development environment.

88. (Previously Presented): The method of claim 87, wherein the application development environment comprises one of a text-based or graphical programming-based application development environment.

89. (Previously Presented): The method of claim 78, wherein a measurement task specifier generates the measurement task specification, and wherein the measurement

task specifier is operable to be launched from one or more of: an application development environment toolbar or an application development environment menu.

90. (Previously Presented): The method of claim 78, wherein a measurement task specifier generates the measurement task specification, and wherein the measurement task specifier is operable to be presented as a properties page of a software object.

91. (Previously Presented): The method of claim 78, wherein a measurement task specifier generates the measurement task specification, and wherein the measurement task specifier is operable to be invoked by receiving user input to an icon.

92. (Previously Presented): The method of claim 78, wherein a measurement task specifier generates the measurement task specification, and wherein the measurement task specifier is operable to be invoked by receiving user input to a node in a graphical program.

93. (Currently Amended): The method of claim 78,  
wherein the method is [[comprised]] implemented in a computer-based measurement system; and

wherein the computer-based measurement system includes the one or more measurement devices, wherein the one or more measurement devices are operable to respectively perform portions of the measurement task.

94. (Currently Amended): The method of claim 78,  
wherein the method is [[comprised]] implemented in a computer system that includes a display; and

wherein a measurement task specifier is operable to present one or more panels on the display for receiving the user input.

95. (Previously Presented): The method of claim 78,



wherein the measurement task specification comprises a data structure comprising the user input received by a measurement task specifier or a measurement application programming interface (API).

96. (Previously Presented): The method of claim 78,  
wherein a measurement task specifier generates the measurement task specification, and wherein the measurement task specifier comprises a measurement task configuration tool which is operable to generate measurement task code in response to said user input, wherein said measurement task code comprises one or more of a text-based program, a graphic-based program, and a prototype-based program.

97. (Previously Presented): The method of claim 96, wherein said measurement task code comprises one or more of: C code; C++ code; Java; Visual Basic; and .NET code.

98. (Previously Presented): The method of claim 96, wherein said measurement task code comprises a measurement task diagram.

99. (Previously Presented): The method of claim 98, wherein said measurement task diagram comprises a graphical program.

100. (Previously Presented): The method of claim 99, wherein said graphical program comprises a LabVIEW graphical program.

101. (Previously Presented): The method of claim 78,  
wherein said expert system comprises a plurality of experts;  
wherein said expert system is further operable to:  
analyze the generated measurement task specification;  
select and invoke one or more of the plurality of experts to analyze the generated measurement task specification and populate one or more candidate run-time specifications;

calculate one or more metrics for each of the populated candidate run-time specifications; and

select one of the populated candidate run-time specifications based on the calculated one or more metrics;

wherein the selected populated candidate run-time specification comprises at least a portion of said generated run-time specification of the measurement task.

102. (Previously Presented): The method of claim 78, further comprising:  
receiving a second user input; and  
setting system configuration parameters for the one or more measurement devices in response to said second user input;  
wherein a device and resource configuration tool receive the second user input and set the system configuration parameters.

103. (Previously Presented): The method of claim 78, wherein the expert system is further operable to validate the measurement task specification.

104. (Previously Presented): The method of claim 78, wherein the measurement task comprises a plurality of measurement sub-tasks.

105. (Previously Presented): The method of claim 78, wherein the measurement task comprises a complex measurement operation using a plurality of measurement devices.

106. (Previously Presented): The method of claim 78, wherein at least one of the one or more measurement devices comprises a hardware measurement device.

107. (Previously Presented): The method of claim 78, wherein at least one of the one or more measurement devices comprises a virtual measurement device.

108. (Currently Amended): A carrier medium comprising program instructions for creating a measurement run-time, wherein the program instructions are executable by a computer to:

receive user input specifying a measurement task;

generate a measurement task specification for the measurement task in response to the user input;

analyze the generated measurement task specification, wherein the generated measurement task specification is analyzed by an expert system;

generate a run-time specification for the measurement task, wherein the expert system generates the run-time specification for the measurement task;

configure one or more measurement devices according to the run-time specification; and

generate a run-time, wherein the run-time is executable to perform the measurement task, and wherein the run-time is generated using the run-time specification.